Migrating from MPLS to SD-WAN

Key Considerations for your Global Enterprise Network

Introduction

Enterprises and service providers worldwide are rethinking how wide-area networking (WAN) services should be deployed. The market has changed due to a variety of long-term trends in the information technology (IT) and communications markets, demanding a more flexible and affordable access to cloud applications.

One of the biggest challenges for enterprises today is managing their WAN costs while simultaneously delivering on key transformation initiatives. Increasing demand for cloud applications, business agility, ballooning bandwidth needs, and expanding branch offices and international locations all present a challenge in managing costs optimally.

In this whitepaper, we take a look at how new trends in the WAN and the cloud, and how Cloud-First WAN (SD-WAN) networks can be used to replace and augment existing MPLS services for enterprise connectivity, increasing business agility, while reducing WAN costs.

Is it Time to Replace Your MPLS?

There are significant advantages in moving away from legacy WAN technologies such as MPLS.

These include:

- Moving to open hardware models rather than being held captive to proprietary equipment.
- Taking advantage of an as-a-service model to manage and deploy software-defined WAN (SD-WAN) services with an elastic cloud consumption model.
- Lowering both capital expense (CAPEX) and operating expense (OPEX) through the use of commercial off-the-shelf hardware (COTS) and optimizing lower-cost WAN links including Direct Internet Access (DIA).

Modern SD-WAN models for connecting the WAN directly to the cloud across optimized links also provide gains in flexibility, security, application performance, and management. SD-WAN can now be implemented as Network-as-a-Service (NaaS), the network consumption model, to adapt to constantly shifting bandwidth needs and provide optimal connectivity to cloud applications.

How the Cloud Has Changed the Enterprise WAN.

The biggest factor driving WAN transformation is the growth of the cloud model, which is forcing corporations and other organizations to rethink their networks.

For decades, enterprises built private data centers and then connected these assets with private WAN links, typically using protocols such as Multiprotocol Label Switching (MPLS).

While MPLS is built to secure these point-to-point links between enterprise branch offices and data centers, the resulting back-hauled (aka tromboned) network architectures fail to deliver on efficient public cloud connectivity. In fact, the use of MPLS can dramatically increase the costs of cloud access by forcing enterprises to backhaul cloud traffic to their data centers and then route it back out, resulting in severe performance penalties and incurring unnecessary cost.

Despite the traditional benefits of MPLS, times change. The new WAN needs to be a Cloud-First WAN. In a recent survey from Flexera, 93% of respondents claimed a multi-cloud strategy, and 87% have adopted a hybrid cloud architecture.

Some of the key points that were reinforced in Aryaka's 2020 State of the WAN report regarding MPLS pitfalls:

- Complexity (37%) is the new leader, growing from 35% in 2019 and only 13% in 2018. This ultimately leads to poor application performance for both on-prem (32% vs 23%), and cloud apps (32% vs 24%).
- Application performance continues to be the biggest area of time investment for IT organizations. This includes remote workers (47%, growing from 36% in 2019), the branch (43%, down from 45%), and integration of cloud and SaaS application origins (42%, growing from 20%). Evidence is that remote workers are placing additional burden upon the network. Managing telcos grew from 16% in 2018, 29% in 2019, to 34% this year.
- SD-WAN application performance is now top-of-mind, at (43% vs 13%) in 2019, followed by the skill gap (40% vs 31%), increased spending (35%), the previous leader, and additional complexity (34% vs 25%).These are all areas addressed by a managed service.
- There is growing SD-WAN managed service acceptance (87% vs 59%) in 2019, and organizations are looking for their adopted SD-WAN deployment to integrate diverse capabilities including WAN optimization (42%), the cloud (41%), security (40%), and MPLS replacement (35%).

The Great MPLS Disconnect

So why does the cloud matter? The changing dynamic of global WAN networks has new requirements. CIOs and IT professionals now demand an efficient, high-performance WANs that can connect to the cloud and branch offices all over the world. This calls for a new type of global WAN – based on intent-based orchestration and automation.

When it was introduced two decades ago, MPLS was a good fit for the growth of private networks, especially given the centralized enterprise architectures prevalent at the time. MPLS was also a boon to service providers, who saw selling MPLS as a premium service to drive growth. For many years, MPLS wasthe gold standard for high-quality managed WAN services offered by global service providers.

But cloud-centric architectures in the digital era have irrevocably changed that. Managers need to lower the cost of the WAN and optimize cloud, security and business agility. Internet broadband and performance-boosting technologies such as WAN optimization and application acceleration mean that private lines may not always be necessary, when leading ISPs' DIA is available. VPNs can now be delivered as a software overlay that does not require specialized MPLS hardware or services.

MPLS may still hold some advantages for enterprises that would like to maintain a hybrid WAN environment, but the drawbacks are becoming more glaring in the face of the evolution of the WAN. Here's a summary of the pros and cons:

MPLS Advantages

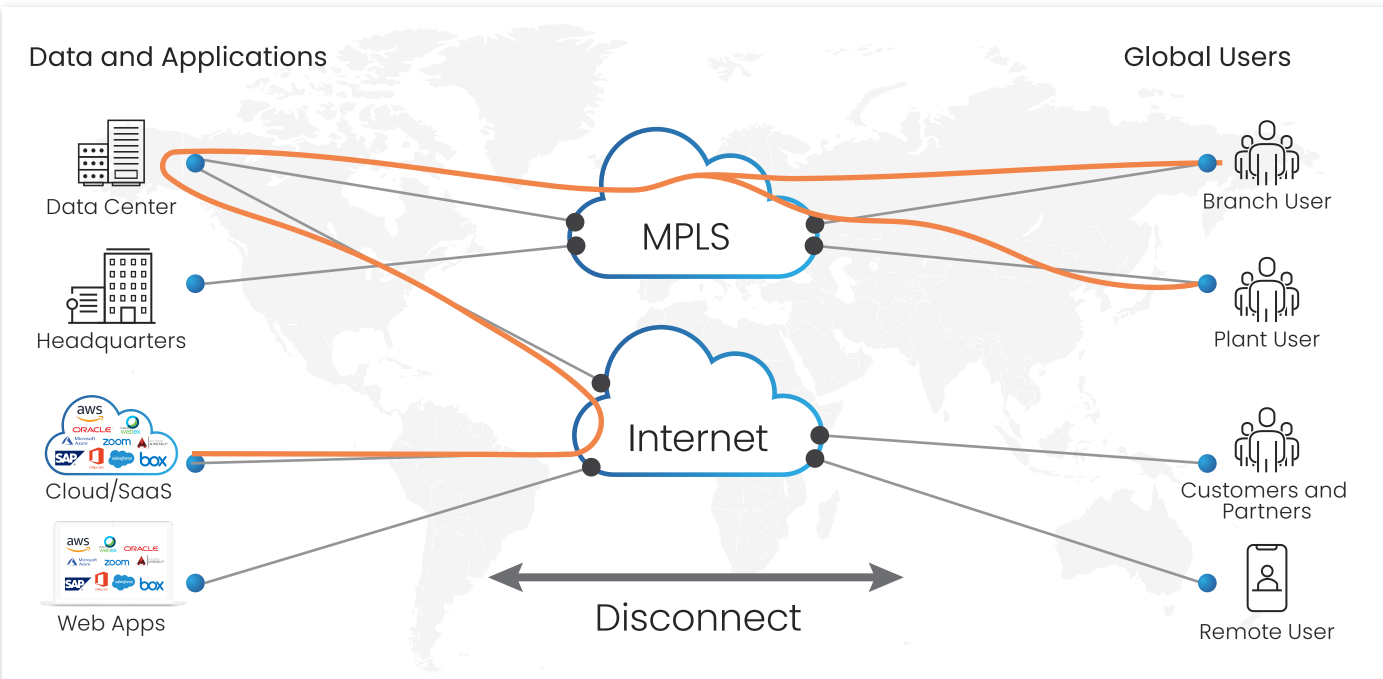
- It's a reliable technology that has served enterprises for years with reliable connectivity from branches to enterprises' HQs.
- It's a quality connection that offers a consistent user experience with deterministic packet loss, latency, and jitter guarantees.

MPLS Drawbacks

- It's optimized for point-to-point connectivity and not point to cloud (no cloud/SaaS Connectivity).
- MPLS requires WAN optimization to offset bandwidth cost.
- MPLS is slow to provision, hence limiting business agility.

The biggest challenge is that MPLS-based networks do not support the requirements of cloud architectures, because they have been designed to cater to the needs of centralized enterprise architectures. A new network architecture is required to support the needs of the cloud.

As the diagram below shows, MPLS creates inefficiencies in WAN connectivity by requiring branch offices and remote employees to connect to private data centers before they can connect to the cloud. Not only is this costly but it is enormously inefficient.



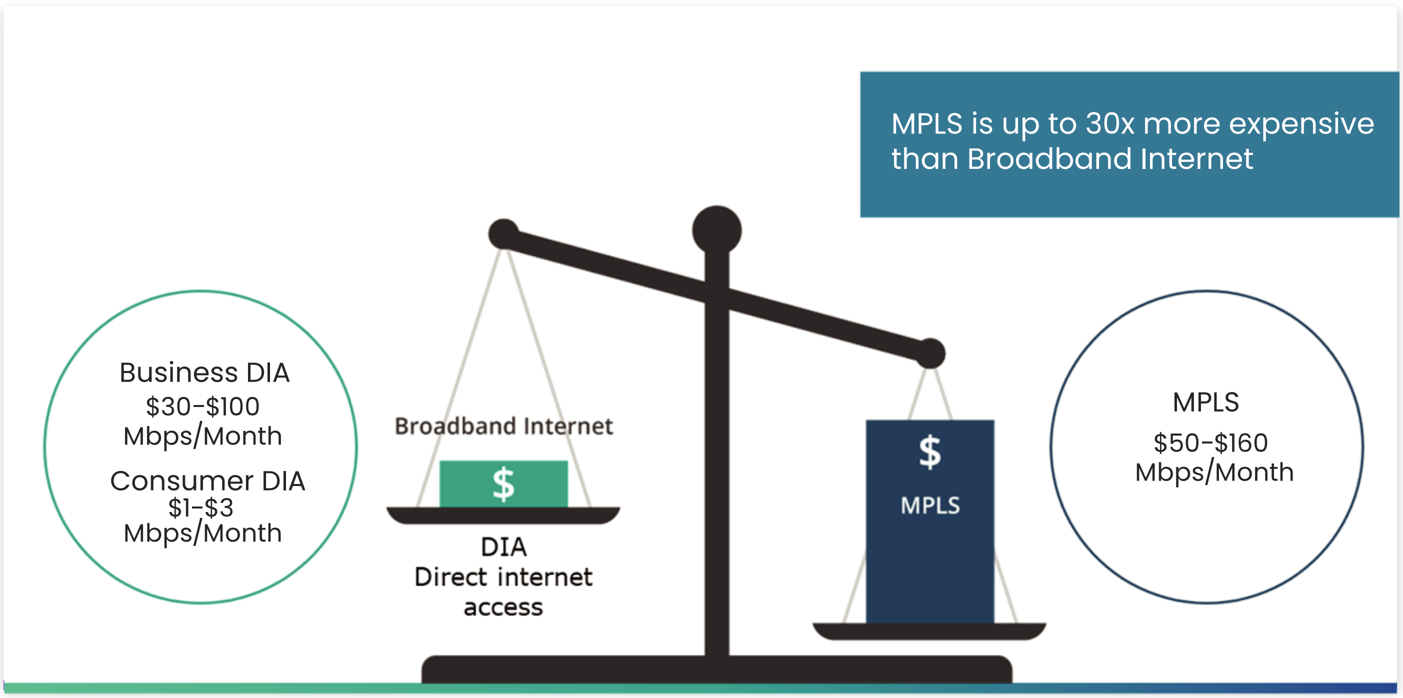
Legacy WAN Application Delivery

Since SaaS application have become the de-facto standard productivity tools for knowledge workers, why route them through the private data center when you don't need to? What is really needed is a Cloud-First WAN that optimizes cloud connectivity and improves business applications performance at optimized cost levels.

Overcoming MPLS WAN Inertia

Legacy MPLS networks remain costly compared to DIA connectivity, and the emerging alternatives present compelling price/performance benefits.

While there is large variability depending on bandwidth requirements and regional availability, the cost differential between DIA and MPLS can be as high as 20-30x.



Source: "Create an Internet-First WAN to Increase Bandwidth at a Fraction of the Cost (ID: G00377541)" – Gartner

There are many reasons why the cost of a legacy WAN is so high, and why the model has been slow to change:

- **Traditional service providers still want to preserve the MPLS revenue stream.** Incumbent service providers are motivated to maintain the relative high costs of private lines in order to maximize revenue from their enterprise customer base. Moving to a cloud-based SD-WAN model cannibalizes these revenues.
- **Lack of competition for the WAN.** In many locations – especially internationally – the local loop is dominated by incumbent service-provider monopolies who have not been incentivized for change. However, SD-WAN technologies represent a threat to this model, because they can be delivered in the cloud and do not require changes to the physical infrastructure..
- **Networking technology inertia.** Once private WANs are established using expensive proprietary hardware and private lines, managers are afraid to change things that took years to build and which still seem to be working — even if the other option lowers costs. However, the universal success of cloud adoption is forcing WAN transformation.
- **Concerns about Internet reliability.** Many IT managers have been afraid of depending on the public internet for connectivity, especially for international connections. But with the introduction of better WAN optimization, routing, and application acceleration technology, this is all changing. Many of these features can now be implemented with a Cloud-First WAN leveraging native cloud technologies, rather than requiring additional hardware installations.

In the past, overcoming these burdens to lower the cost of the WAN was not possible with a hardware-based deployment of point-to-point networks. But with the case of a managed SD-WAN, that's all changed. Technology advancements in optimizing connectivity to the public cloud using publicly available broadband connectivity can deliver management and cost benefits – and it can all be set up in a matter of weeks of not days.

Change is Good: Benefits of the Aryaka Cloud-First WAN

Advances in the performance of DIA, the proliferation of cloud, and plummeting broadband prices are all providing reasons to move away from a legacy WAN model or first generation, Do-It-Yourself (DIY) SD-WAN technologies.

IT managers will find overcoming these burdens to lower the cost of the WAN easier over time. Aryaka's Cloud-First WAN can deliver performance, business agility and cost benefits and can be implemented in only 48 hours.

Element Solutions, a diversified producer of high technology specialty chemical products and provider of technical services, uses the Aryaka Cloud-First WAN to lower costs and improve the performance of cloud applications, including integration with Azure and Microsoft 365.

"With Aryaka, we've saved approximately two to three million dollars over a traditional MPLS solution. We've also seen a significant increase in file transfers – anywhere up to 20x increase in speed."

- Dustin Collins,
Chief Information Officer
Element Solutions

In a recent SDxCentral.com survey, both service providers and enterprises alike stated that more flexibility and manageability of networking technology were desirable and driving the search for new WAN technologies. Both the enterprise and service provider camps believe that moving away from the "box" model of delivering WAN services using point-to-point technologies is important to lowering management costs and hardware expense.

Moving to a software-based cloud NaaS model for delivering WAN services will ultimately lower both operating costs (OPEX) and capital costs (CAPEX), providing a rapid return on investment (ROI) for both enterprises or service providers.

To summarize, the benefits of a Cloud-First WAN include:

- Reducing the costs of global and regional WAN connectivity by leveraging business-class DIA and optimizing the use of private lines.
- Lowering the costs of proprietary CPE hardware with white box, Linux-based, standard appliances.
- Providing CAPEX benefits with intent-based orchestration, automation and cloud- based management. Automated management of SD-WAN routing in the cloud.
- Avoiding vendor lock-in and proprietary hardware.
- Using analytics to drive intelligence, dynamic traffic prioritization, and load balancing.
- Built-in WAN optimization and security.
- Optimal performance of cloud applications such as SaaS.
- 99.99% SLA guarantees with industry-leading reliability and an NPS (Net Promoter Score) of over 65.

Independent research proves that enterprises are looking for change in the way they buy and deploy WAN services. SD-WAN deployments will grow at a CAGR of over 85% over the next few years, according to IT research firm Gartner.

Building a Cloud-First WAN as a Strategic Initiative

Enterprises are moving away from their legacy WAN architectures in order to address the new requirements for their network: the WAN needs to be Cloud-First, address changing security concerns, deliver on business agility and reduce total cost of ownership.

Aryaka provides customers with architectural choice in security to arm them with the ability to build a security architecture that truly fits their very particular business needs: Aryaka keeps an ecosystem of best of breed security partners.

Furthermore, unlike statically configured box-first MPLS network architectures, Aryaka delivers on an elastic consumption model that allows enterprises to immediately and seamlessly address any shift in traffic patterns to and from cloud applications as well as legacy applications.

Enterprises adopting Aryaka's Cloud-First WAN can benefit from the exact same design patterns that won over application infrastructure engineers as they adopted cloud deployment models: business agility, a flexible consumption model and optimal support for cloud deployment. Furthermore, the operational model allows network engineers to focus on business initiatives rather than just "keeping the lights on."

About Aryaka

Aryaka is the leader in delivering Unified SASE as a Service, a fully integrated solution combining networking, security, and observability. Built for the demands of Generative AI as well as today's multi-cloud hybrid world, Aryaka enables enterprises to transform their secure networking to deliver uncompromised performance, agility, simplicity, and security. Aryaka's flexible delivery options empower businesses to choose their preferred approach for implementation and management. Hundreds of global enterprises, including several in the Fortune 100, depend on Aryaka for their secure networking solutions. For more on Aryaka, please visit www.aryaka.com.

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